Interview with Rear Admiral William E. Landay Chief of Naval Research

Rear Adm. William E. Landay

Rear Adm. "Bill" Landay is the Chief of Naval Research and the Assistant Deputy Commandant of the Marine Corps for Science and Technology Director, Test and Evaluation and Technology Requirements.

The Office of Naval Research's mission is to: foster, plan, facilitate and transition scientific research in recognition of its paramount importance to enable future naval power and the preservation of national security. The ONR provides technical advice to the Commandant of the Marine Corps, Chief of Naval Operations and the Secretary of the Navy and works with industry to improve technology manufacturing processes.

With a budget of about $1.8 billion and additional funding of $400-$500 million from the Congress, the CNR, working with about a dozen top advisers, directs the strategy for naval science and technology research. Development of naval capabilities falls into the Department of Defense budget activities known as 6.2 and 6.3 funding: applied research and advanced technology development, respectively.

In talking with Rear Adm. Landay and his science advisers, the common thread is their thirst for "game-changing" technologies in all areas of research – weapons, sensors, ships, power and fuels, life sciences and more. CHIPS asked the "CNR" to discuss his thoughts on celebrating 60 years of naval research during the 2006 Naval S&T Partnership Conference August 2006.

CHIPS: Probably, one of the most intriguing aspects to the conference is the $1 million "CNR Challenge" for innovative science and technology ideas.

Rear Adm. Landay: We have had conferences in the past and tried to provide opportunities for folks to come to ONR with good ideas in areas that are of interest to us. What we found is that there were some good ideas, but we had trouble doing anything with them because we were in the middle of an execution year, and the budget is already set.

We thought about how we could encourage innovative thinking and use the flexibility of this conference to get folks to provide input in a way that would be of value to them. A lot of folks said they were not sure that it was worth coming with ideas when we could not do anything with them. So we carved out some dollars — this year's dollars. So if the ONR project officers believe there is a good idea that could be of real benefit, we have dollars set up to fund it.

It is an opportunity for our folks to have more flexibility. We set $1 million as a goal. We would like to be able to spend it all, but it depends on the ideas. It will not be $1 million per award. We are looking to fund a number of awards.

The thought is that if there are good ideas we can get them started and continue to develop them and bring them into our budgeting process — if we need to fund them more than the first year or two. We are excited because we have gotten a lot of good interest. We have had almost 100 submittals. It is more than we have gotten in the past because people see it as an opportunity.

This is one of our focuses — things that we can do to speed up our ability to find and start working on those good ideas, which in the past we have not been able to do.

CHIPS: Besides military utility, what are your criteria when you are reviewing these proposals?

Rear Adm. Landay: There are a number of things that we look at. Is it innovative? Is it in an area that we have not thought of before or allows us to approach a problem differently? In a lot of cases, we will be told by the operators, 'Here's what we need.' But they frequently will ask for our help with an answer in mind.

We tell them to tell us what their problem is and let us look at the opportunities. Sometimes we find completely different ways of approaching a problem that neither the operator nor our folks have thought of before.

We are also interested in ideas that not only solve one problem but potentially have opportunities to solve other issues. Ideas with multiple applications are of interest to us — things that may potentially open new avenues that we have not thought of before, that are not just innovative, but take us in a different direction.

We always look at the risks. We would like to find opportunities with reasonable risk, but sometimes we need to take some high risk (bets, if you will) because we see enormous payoffs. Sometimes someone will bring something to us and we are not sure how we would use it, but it could change the way we are thinking. The out-of-the-box approach to something is often worth making the relatively small science and technology investment to see if we can move it in a particular direction.

CHIPS: Are you going to make a decision during the conference?

Rear Adm. Landay: We asked people to give us a brief abstract. We have taken those and out of those that we thought looked promising, we have set up one-on-one sessions. The person who submitted the abstract will get a chance to sit down with one of our key project officers and talk about it.

Legally, we cannot say, 'Here's $100,000 and off we go.' We still have to go through our contracting process, but we want to give that department head or project officer the ability to say this idea is

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good, and we will fund it. Hopefully, in a short time, we are engaging with the researchers to sign the final contracts and put the conditions in place. What has always prevented the project officer from doing that is having a ready pot of money. What I have told them is that I have this pot of money, and if it is a good idea, you can spend out of it. The project officers are excited about that.

CHIPS: Is this the purpose of the conference?

Rear Adm. Landay: There are a couple of purposes for the conference. One is to keep a good discussion between ONR and industry in terms of what we are doing and what our strategies are and where we see the Navy going. It is informing industry, it is informing academia and the naval warfare centers, the Navy labs and other government labs.

It shows them what is important to us — as well as our strategic thinking as we go forward. It also gives them an opportunity to propose back to us. It is an information exchange. We think it is important because S&T is not always well understood. To periodically get together with all the key players and say, 'This is what we meant when we said the CNR challenge; this is what we meant when we said we were going into directed-energy weapons,' so that everybody walks away with a better understanding.

We wanted to do some displays this year. We have not done that in the past. The conference provides opportunities to display and exhibit some of the things ONR is talking about and provides opportunities to interact with other folks. It is important that the science and technology piece of this gets recognized, as well as the warfighting and people piece.

CHIPS: You mentioned Tech Solutions this morning, where Sailors and Marines can submit ideas that impact their readiness and quality of life. What kinds of ideas do you get from them – more of the nitty-gritty issues?

Rear Adm. Landay: It tends to be that way. People would say that the problem with S&T is that you are always trying to focus on big global, change-the-world kinds of things, and you should, but there are a lot of things impacting Marines and Sailors that you should also focus on. A lot of the Navy infrastructure is designed to work those issues. Sometimes there is not a solution to them.

We have realized that we have such a strong, vigorous S&T base that sometimes the answer already exists in a lab, but we were thinking of that answer for another problem. Tech Solutions is an opportunity to easily and quickly lift something we have and put it in a different application to support the Sailor.

In the last three years we have had about 150 requests come in. About 40 of those were not science and technology related. Of the 100 that were left, we have sent 74 solutions out to the fleet. It is about an $8 to $10 million a year budget, so it is not a huge investment of our dollars. It ranges from battle lanterns to a solution to make submarines on the surface more visible to radar to prevent collisions.

Submarines on the surface are hard to see. We were asked if there were some way to make a submarine on the surface more visible to radar by building a radar reflector that would be small, easy to use, easy to put up, and easy to take down in the submarine. There was not anything readily available, but we are good at radar and signature.

It came into Tech Solutions, and they turned something around and gave it back out to the submarine fleet — and they love it. We never thought about how we could use solutions and signatures to make something bigger …

CHIPS: The CNO has said that Sailors are going to be boots on the ground to relieve some of the stress on Army and Marine troops. Has this been a big focus change for naval research?

Rear Adm. Landay: It has not been a huge focus change. The reason I say that is that relieving Army and Marine folks from some duties did not require a lot of science and technology research. For example, we have folks in the Navy who run naval bases for us. We also have to run bases over in Iraq.

We have not made any big shifts in science and technology. The biggest one is probably the stand up of the Navy Expeditionary Combat Command or NECC. We are engaging with them in terms of how we might be able to support them.

CHIPS: Is the effort for the NECC focused on its riverine capability?

Rear Adm. Landay: They have the EOD (explosive ordnance disposal) mission, the riverine mission, their mission integrates all warfighting requirements for expeditionary combat and combat support elements.

Our efforts have been focused on the riverine, EOD and force protection. In many cases it has been things that we have been doing for the Marine Corps that seem to have reasonable applications to NECC.

A lot of our interaction initially was to show them the things that we can quickly transition to help in their mission. They are still new, less than a year old, so they have not made their first big deployment yet. We are trying to make sure that we are fully ready to support them in preparation for their initial deployments.

CHIPS: I was fascinated to find that ONR has funded nearly 60 Nobel Prize winners. What draws this caliber of scientist to naval research?

Rear Adm. Landay: To some extent it is a tribute to the people at ONR who are going after the best research and researchers and ideas we can find. The fact that we have that many of them is an

indication that we have been good at identifying critical areas that have significant potential — early.

To win the Nobel Prize, the potential tends to be much broader than just the Navy. It may be 15 or 20 years of research before the person gets recognized, and we just don't fund them in the last years. We have a good process where the research community is comfortable working with us. We like to give our researchers a lot of freedom.

We are hiring these folks or giving them grants for their intellectual capital to figure out how to move us forward. We try to give them a lot of flexibility and freedom. Sometimes things do not pan out, but that is OK.

The third piece of it is that we have frequently been able to show researchers, early in their research, where we see the naval application for that research. The big thing is that we have people who are good at understanding where good science and technology is being done, and they are aggressive about engaging those researchers.

We have been doing this for 60 years. I think there was a good model in the beginning for how you can engage with researchers and scientists without them feeling like the Navy is trying to turn them into Sailors.

They are proud that they work with ONR. I am amazed at the number of people I meet who say, 'ONR funded my first research.' Assistant Secretary of the Navy for Research, Development and Acquisition Dr. Delores Etter received her first research grant from ONR.

CHIPS: Was there anything that surprised you about ONR when you became the Chief of Naval Research?

Rear Adm. Landay: I always had a high regard for the ONR. The quality of the people did not surprise me. What did surprise me is the breadth and scope of the reach of ONR.

I am just amazed at the people that tell me of some association that they have with ONR. They were an investigator, or we funded some research through them, or they were part of an education program that ONR partially supported — that is both in the U.S. and outside of the U.S.

I have to admit that I always thought of ONR as inwardly U.S.-focused, primarily doing research at Navy labs and certain universities. But we are doing research at a lot more universities than I ever imagined both inside the U.S. and outside the U.S. ONR is doing work across the government and more work in industry than I thought. The scope and breadth of who our scientists engage with impressed me.

CHIPS: There has been some debate about the crisis in recruiting scientists and engineers for the naval labs and warfare centers, but some critics say that this has always been a problem.

Rear Adm. Landay: I think there is a challenge. I have not been able to decide for myself whether it is a crisis or not. When you look at who is going into science, technology and engineering in universities across the U.S., it is a broad mix. There are a lot of foreign nationals that come in.

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But one of the challenges in our labs is, in most cases, we need those people to be U.S. citizens. Also, because a lot of money can be made in business, it is hard to bring folks into engineering curriculums and continue them through their master's and doctorate degrees. We need to continue to focus in that area.

In ONR, I am trying to rationalize what my role should be. Programs like N-STAR, Naval Research — Science and Technology for America's Readiness, provide an educational opportunity.

We are interested in the diversity of the workforce. We try to do a lot of work with historically black and minority institutions because we think they are an untapped resource. We go to universities that have up-and-coming engineering and science programs.

I put $1.6 billion worth of research money out on the street, so we try to link N-STAR programs to actual research we want to do. The way you recruit students is have them spend summer as an intern in their junior year of college at a Space and Naval Warfare Systems Center, for example.

During that summer internship, they are drawing a salary and are in the middle of some exciting work. They may look around and think, 'This is a great place to work.' They go back to the university, get their degree and when people are asking them to come work for them, they have a favorable impression of the Navy and DoD labs.

I am anxious about the workforce. There is a lot of competition for scientists. Everybody I am trying to hire into the Naval Research Lab, IBM is trying to hire, GE is trying to hire or a university is trying to bring back as a researcher.

There is a lot of competition for what appears to be a dwindling pool. We are trying to keep our pool of researchers robust and early on (just like any other company) trying to get people to say, 'There are some exciting things going on within the Navy research enterprise. I might not earn quite as much money, but the excitement of the research outweighs the benefits of working elsewhere.'

We do very well. Folks come back. They can do some great research in our labs and in our warfare centers.

Go to Navy NewsStand at http://www.navy.mil/navydata/bios/navybio.asp?bioID=172 for Rear Adm. Landay's biography. For more information about the Office of Naval Research go to www.onr.navy.mil.

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